

The Impact of Adoption of Digital Technology on Companies for Prospective Workers

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ABSTRACT

This study discusses the impact of technology adoption in companies on prospective workers in Semarang city. 230 respondents consisted of graduates of colleges, high schools and vocational high schools using a simple regression model with smartPLS. The results showed that deskilling, wage, unemployment, education improvement had a significant impact on the adoption of technology in the company. The other side of the companies want to innovate and create efficiency, but it has consequences that need to be adjusted by potential workers with technological changes in the industry. Deskilling and wage have the highest impact for some of the resources in the company must be replaced with more efficient technology, and automatically unskilled labour is eliminated by the presence of new technologies. This research is expected to provide input to the world of education and the prospective workers to continue to improve the skills of adjusting era.

Keywords: workers, digitalisation, technology, wage, unemployment, education, deskilling

1. INTRODUCTION

In recent years technology or can be said as digitalisation has become a topic discussed in the realm of labour. Some communities welcome the opportunities created by the advancement of digital technology, but some are concerned about the changes or impacts that are generated, especially on the labour market. This is because some people do not understand the impact of digitalisation with a more open mind [1]. People who have a more positive view of digitalisation will think of creating new business models by utilising the opportunities that exist.

With the technological revolution, it is increasingly difficult to adjust some regulations relating to the product market and the labour market [2]. The production chain that has utilised digital technology can reach many countries and shows an increase in economies of scale that have never been seen before. Indonesia has carried out a digital revolution which is usually referred to as the 4.0 industrial revolution. These changes have the potential to change every side of people's lives every day, from making decisions, improving customer experience, and creating new business models to optimise efficiency.

The application of new technology has an impact on the nature of production and employment, from the

results of previous studies that any progress that increases productivity (value-added per worker) can increase labour demand, and employment and wages [3]. Technological advances, on the one hand, benefit workers with skills that are certainly appropriate and increased productivity in one sector can lead to loss of jobs in the sector. However, when there are sectoral job losses, other sectors will develop and contribute to overall employment and wage growth.

The current phenomenon of new job seekers often faces difficulties in breaking into the labour market. Even workers who are highly educated and skilled who do not have a job history often find it difficult to get their first job [4]. This happens because it is difficult for prospective employers to ensure unproven productivity. This applies to the labour market, which has implemented many technologies that replace jobs that are usually done by humans. Threats and challenges for schools and colleges that print prospective workers. They must be able to adapt to their skills and skills to market needs.

The purpose of this study was to determine the impact of technology adoption in companies on prospective workers in the city of Semarang. The results of this study will undoubtedly be able to provide an overview of the conditions of prospective workers who have minimal experience and of course, will be able to be taken into

consideration for related parties, in this case, the world of education to make adjustments.

2. LITERATURE REVIEW

2.1. Adoption of Digital Technology

Digital technology is not new to companies or organisations. Many companies have faced and adopted technological developments that take advantage of the use of data and information, transactions, and communication with customers. One of the potentials of digitalisation is unknown for many different industries and the ease that allows companies to exchange and connect information across different units [1]. Some companies now have digital maturity, while some are still in the process of digitising individual work processes; others have changed the entire business model [5]. At present, it is difficult to find a company that does not interact even using digital technology to maximize customer satisfaction. The term automation emerged as the development of digital technology in the world of the industry meant the replacement of real-world processes with digital equivalents [6]. This digitization process overshadowed workers who would only seek work with the replacement of almost all lines of work with technology. From the production process to the digital-based marketing process. The biggest impact of technology adoption or the term Factory of the Future or Smart Factory is asset efficiency, quality, cost, security and sustainability. Some major concepts regarding the Factory of the Future company include [7]:

- a. *open value chain* by utilizing digital technology enables real-time processes and optimization of planning and implementation, which leads to changes in the control of production carried out by humans to be replaced by information technology systems.
- b. *Flexible production* is almost similar to the value chain system, which is a single production system that can adapt quickly to meet customer demands.
- c. *Human centered* manufacturing is a shift in more flexible relationships between humans and factory conditions regulated by robots in this case automation.

2.2. Prospective Workers & Unemployment

New entrants or job seekers often face difficulties entering the labour market. Even workers who are highly educated and skilled without a job history often find it difficult to get their first job. Skill compatibility and mismatch in the world of work often contradicts the theory of social consequences, which among them are referred to as automation, credentialism, deskilling, and the emergence of post-industrial societies [8]. Job seekers who are generally adolescents face a variety of

influencing obstacles such as not having the necessary skills and or work experience, not having information about employment opportunities and or knowledge about the job search process, or they may not be able to understand the flow of seeking capital when opening a business [9]. This is of concern to prospective workers even though they are said to have sufficient competence, but on the other hand, many companies prefer to use technology so that the challenges of job seekers are more significant.

There are several thoughts about the potential for the creation and destruction of a work that is conceptually interpreted by distinguishing between task tasks that are usually carried out regularly by humans but now can be done equally well or more efficiently by machines or computers, [10]. Some skilled workers feel challenged by the ongoing digital revolution because they often become direct substitutes for tasks that are routinely carried out by humans. Some technology in the company has made extensive changes to the production process by using barcode production, sorting processes to quality control and packaging. This has a significant impact on the tasks normally carried out by workers. Like many other technological developments, digitalization has become a general-purpose technology, that is, it can be adopted in various industries, including the service sector in this case that is in demand in Indonesia, namely startup companies such as Gojek & Grab. The company succeeded by employing much new workforce because of its base of services with highly efficient production line processes.

However, the job position of the company is certainly much service in this case the driver. A higher position above it is certainly occupied by workers who have special skills and competencies. At present the process towards a digital economy also actually results in the consequences of replacing labour with technology. This is a classic debate about the interaction between automation and skilled and unskilled work. The effect of unemployment is certainly a matter that needs to be considered by stakeholders and job seekers. The production sector, workforce qualifications, assignments, were replaced by digitalization. High unemployment rates simulate the potential for complementarity of workers with digital capital [11]. The definition of unemployment consists of all people over the prescribed age to measure an economically active population which for a certain period consists of 3 criteria [12] :

- a. Without work or not working
- b. Ready to work which is ready to work
- c. Looking for a job that is taking steps to find a job.

H¹: digital technology adoption has an effect on unemployment

2.3. Wage

Wages have been the subject of discussion as of the industrial revolution 1.0 to date. Own wages are things that can directly force companies to rethink technological processes, intensify the automation of work processes as much as possible, and thus increase the efficiency of industrial production by reducing wage costs [13]. The term labor today can be interpreted as augmentation and human interface and division of labor. The division of labor carried out by the company today by adding an element of automation and additional intelligence and all that must also be acceptable to the workers who first existed [14]. Education of work rations that have been partially taken by robots or automation machines has had a significant impact on workers' wages.

Large scale increases in production as well as high and fast demand from the community can be realized with new technology. The rise of digital technology has also been able to boost the company's revenue, but the other side has caused inequality to increase, and workers' wages have been depressed. At present there is a need for regulatory structures and even economic foundations during the change in the Industrial Revolution 4.0. Every emergence of new technology changes demand for certain types of labour, and thus different skill requirements [15]. In general, depending on the nature of work, workers can collaborate or compete and lose technology. Advances in digital technology can reduce wages and employment opportunities for manufacturing workers. Technology change does not and results in unemployment. For example, the emergence of machine learning can increase the productivity of software developers and also create investment opportunities and of course increase income, but with the requirements of the skills and abilities of critical workers. In this case, there are still many prospective job seekers who have not yet ascertained their work skills before being accepted and working in a certain period. Digital technology trends will increase the wages of workers who use cognitive intelligence to be high especially in big cities, while physically working low-wages that are threatened will be replaced by much automation in small towns and rural communities.

H²: digital technology adoption affects wages

2.4. Deskilling

Artificial Intelligence (AI), Machine Learning (ML) and Big Data have entered the company line. This development shaped modern work which had an impact on deskilling, the emergence of new skills, new forms of organization and strategy [16]. Deskilling itself is defined as the replacement of skilled labour with automation. Automation has caused changes in employee skills ranging from deskilling, while automation provides benefits ranging from increasing speed, accuracy, damage [17]. Automation can also serve as a platform for

creating innovation and accumulating knowledge. Deskilling has several interrelated factors, including [18]:

- a. use of tools to make decisions (software) that can lead to dependency;
- b. reduced professional attitude in the decision-making process;
- c. lack of professional skills in decision making

H³: digital technology adoption affects deskilling

2.5. Education Improvement

Competence reflects good behaviour that can be replicated in social competencies related to one's ability to interact. Changes in digital communication technology have had an impact on society so quickly that education, policymakers and instructors must be able to respond to changes related to curriculum, pedagogy and assessment. This condition shows that literacy in the digital, technological, and human fields is necessary to help teachers improve teaching competencies [19]. Education aims that every student is expected to be able to develop as an individual not to be eroded in the era of industrial revolution 4.0. Therefore there needs to be education that is by the current digital era [20]. Skills are a key that is considered a resource that will enable competitive advantage and productivity for the company. The labour market has experienced significant growth, such as managerial and professional positions that require flexibility and problem-solving skills. Several things need to be adapted to education in this industry 4.0 era, namely the development of skills in innovation, leadership and management [21].

H⁴: adoption of digital technology affects Education Improvement

3. METHODS

The technique used is a simple regression with the help of SmartPLS. 230 respondents consisted of graduates of colleges, high schools and vocational high schools. In this type of PLS regression model, it consists of two factors, one for predictor variables and one for response variables [22]. All predictor variables measured are indicators for predictor factors and all the dependent variables measured are indicators for dependent factors. In this study had one predictor and four response variables. Analysis and measurement techniques using (1) outer model; and (2) inner model [23].

4. RESULTS

Based on the results of the Path coefficients, it shows that the results of deskilling 0.407, education

improvement 0.188, unemployment 0.256 and wage 0.377, this indicates that the adoption coefficient of digital technology all has a positive influence.

Table 1. Path coefficients

	Deskilling	Education Improvement	Unemployment	Wage
Adoption Digital Technology (ADT)	0,407	0,188	0,256	0,377

While the test results on Outer Loadings are almost entirely more than 0.70, which indicates that the reliability for the reflective model is quite good and can

be said to be significant, these results can show that indicators can represent and contribute to and definition of latent variables [22].

Table 2. Square

	R Square
Deskilling	0,366
Education Improvement	0,336
Unemployment	0,376
Wage	0,342

The R Square results show that the variance of deskilling variables, education improvement,

unemployment and wage can be explained by the average model of 30%.

Table 3. PLS bootstrap output

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
ADT -> Deskilling	0.396	0.406	0.055	7.252	0.000
ADT -> Education Improvement	0.186	0.205	0.069	2.682	0.000
ADT -> Unemployment	0.250	0.263	0.060	4.160	0.000
ADT-> Wage	0.368	0.372	0.060	6.181	0.000

Testing the hypothesis results in the overall T statistic > 1.96, which means it can be said to be significant at the 0.05 level. Then it can be concluded that all hypotheses in this study are acceptable. In the Original sample table, it is known that the most dominant variables are deskilling and wage, while the other two variables have lower values.

5. DISCUSSION

The company is currently striving to innovate by utilising and adopting several technologies that can improve efficiency and productivity. This illustrates that companies in the city of Semarang are rapidly adopting technology in the process, such as using a barcode system that makes it easier for salespeople to check the quality and type of products. This proves that reducing labour is common. The impact is also very diverse, including in

this study, namely unemployment, wages, deskilling and education. Especially for prospective workers, this is a serious threat, because if you do not have specialized skills in terms of technology, surely you will be eliminated. Automation technology reduces the value of the labour part added to this because there is an increase in productivity that exceeds wages and employment. Companies also reduce overall labour demand because jobs that are usually human have been quickly replaced by automation.

5.1. Digital Technology Adoption Has An Effect On Unemployment

Based on the results of data analysis, it is known that the adoption of technology in companies has an impact on unemployment for prospective workers. The results show a positive and significant impact on unemployment, which certainly illustrates that more and more companies

are adopting digital technology in their business lines, of course increasing the number of unemployed. This has been carried out by the company so that it continues to survive in the market conditions that have almost all been moving to implement the technology. Human resources in this case, prospective workers with minimal experience cannot be said to be victims, but they must also feel challenged by the rapid changes in automation. Competence of expertise in a field needs to be sharpened by prospective workers who come from colleges and secondary schools. Prospective workers from higher education who are considered to have more competence are not necessarily more current jobs. In addition to academic abilities that are of concern, skills in using technology, communication styles, and being able to regulate self-pressure are also needed. Although the results of the research on the impact of unemployment are not too high, this can be predicted and can be anticipated by workers and prospective workers. Competencies for prospective workers can also be provided when the process of education activities takes place, or non-formally takes a standardised course, which can be done to be able to collaborate with the technology adopted by the company. Entrepreneurship is also an alternative way for prospective workers, but not all can take risks with this step.

5.2. *Digital Technology Adoption Affects Wages*

Results from the impact of digital technology adoption have a positive and significant effect on wages. The results also show the dominant value of wages. This shows that wages are affected if the company implements the replacement of human labour with technology. The tendency to emerge when the process of adaptation of digital technology forms a pattern that jobs with low skills will be paid low. The term skill mismatch can describe a situation where worker skills exceed or are below the standard that the company is looking for [13]. This makes a discrepancy between individual preferences, interests, needs, skills, demographic characteristics, and required qualifications and compensation. The main key so that labour wages can adjust to the application of technology in companies, namely by adjusting the competence of labour through training and competency tests needed, one of which is related to technology. The skill of using labour technology becomes the company's consideration in determining the number of wages to be given. The efficiency that companies do with the use of technology is also not to blame, but certainly, companies and governments work together to be able to find solutions for workers who will be replaced by technology adoption. For prospective workers must also be able to see the challenges that occur in the company today by preparing skills that support the application of technology in the company.

5.3. *Digital Technology Adoption Affects Deskilling*

Based on the results of research adoption of technology has a high enough influence on deskilling. This is since deskilling itself is a workforce that is replaced by technology or automation. Adoption of technology in the world of work is a necessity currently to encourage effectiveness and efficiency in terms of service, production and marketing even to finance. The emergence of convenience offered by digital technology is now a challenge for prospective workers. Prospective workers should not only be lulled by the ease of technology, but of course they must learn and adapt to technology that helps in the world of work, for example with the existence of an online payment model which will certainly reduce the payment process through banking services which will certainly reduce the workforce in the service section them. Prospective workers who the majority do not yet have a background in mastering technology will be very difficult to accept in the industrial world that already utilizes digital technology.

5.4. *Adoption of Digital Technology Affects Education Improvement*

Skills certainly have a lot to do with educational institutions that train workers to have valuable skills that lead to higher wages [15]. The development of education alone is not enough to explain the growth of wages. Improving the skills needed to do specific jobs can provide better insight than just being wage oriented. Increasing the specificity of the workforce and skills model in the workplace can better resolve labour trends.

Education is now guided by the demands of the world of work, which almost all educational institutions have implemented.

6. CONCLUSION

It can be concluded that the impact of technology adoption in companies on prospective workers varies significantly from the most classic ones, namely unemployment, wage problems, deskilling and education that must adapt to the rapidly changing needs of the industry. Companies also cannot be blamed for adopting technology because market demands also encourage them to continue to innovate and develop. All of that formed into an endless circle. For prospective workers from universities and secondary schools that must be a concern are specific skills related to the needs of industry-based technology in the company in general?

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